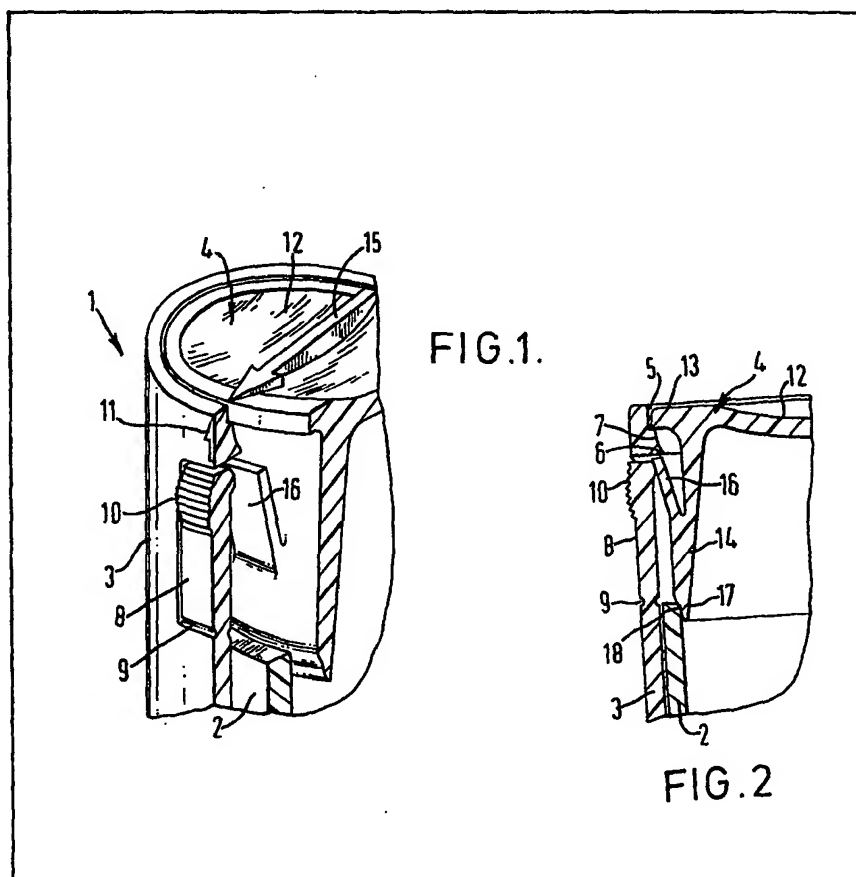


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(54) Child resistant container and closure assemblies

(57) Removal of closure (4) from the mouth of a container is prevented by engagement of a resilient locking arm (16) on the closure with an annular abutment (6) on the container, unlocking being effected by manipulation of a press tab (8) on the container to depress the arm (16) out of engagement with the abutment (6). The closure is rotatable by means of rib 15 and may be fitted to the closure in any orientation. In order to facilitate alignment of the thumb tab (8) and arm (16) to enable unlocking of the closure, the closure includes an arrow (15) indicating the position of the arm (16). Diametrically opposed tabs and arms may be provided.



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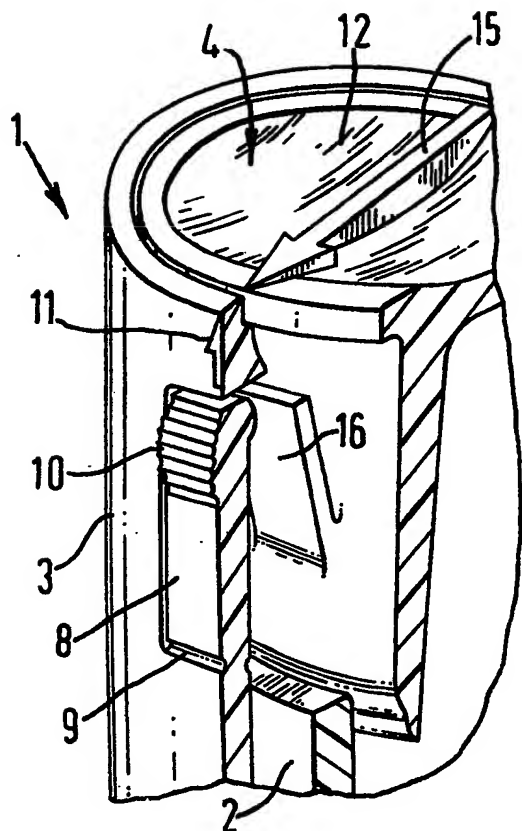


FIG. 1.

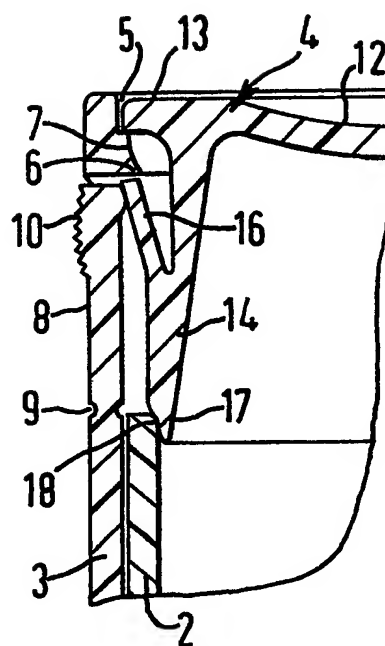


FIG. 2

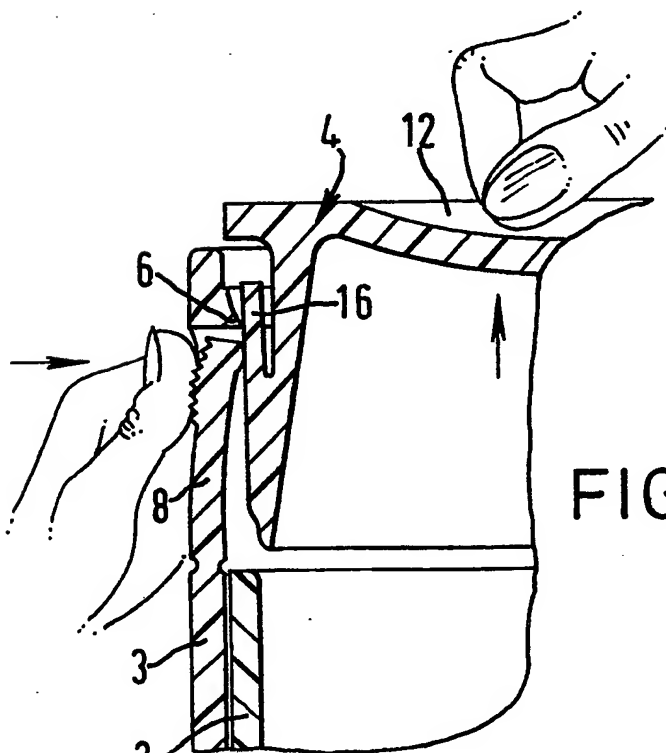


FIG. 3.

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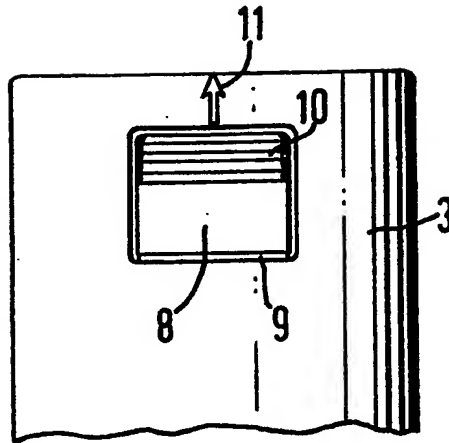


FIG. 4.

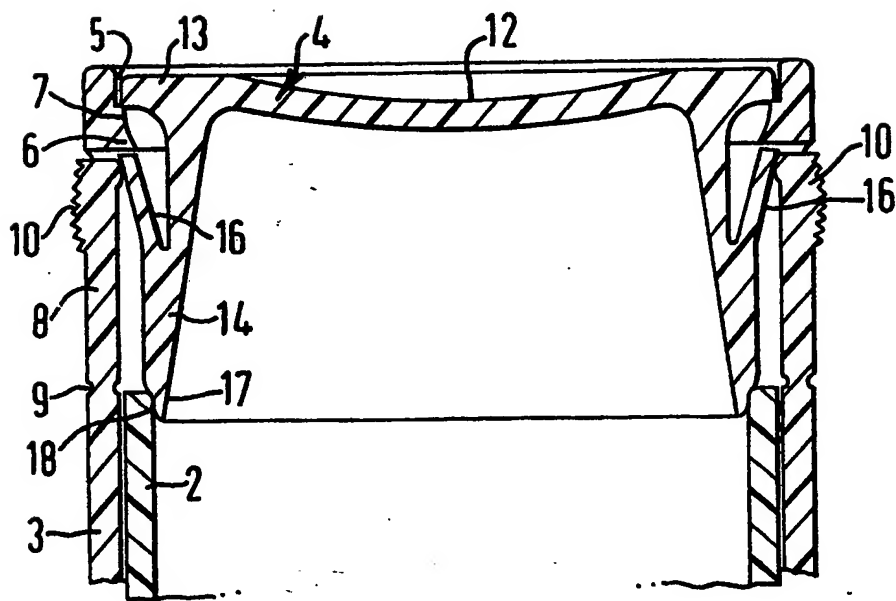


FIG. 5.

SPECIFICATION

Improved child-resistant container and closure

5 This invention relates to an improved child-resistant container and closure assembly and the invention also includes a closure and a container body for use in the assembly.

10 According to the present invention a child-resistant container and closure assembly comprising a container body with a mouth for insertion and removal of the contents and a closure to close the mouth of the container body wherein removal of the closure from the body is prevented by engagement
15 of a resilient locking arm on the closure with annular or like abutment means on the container body so that the closure is positively locked in operative position, unlocking being effected by manipulation of a press tab on the container body to depress the arm
20 out of engagement with the abutment means whereby the closure may then be removed from the body. The invention also including a child-resistant container and closure assembly comprising a container body having a mouth closable by means of a
25 closure which includes a depending portion and a resilient locking arm projecting outwardly therefrom, annular abutment means around the inside of the mouth of the container body, and a resilient wall portion or press tab on the container body cooperable with the resilient locking arm on the closure, the arrangement being such that with the closure in position on the body the resilient locking arm normally prevents removal of the closure by engagement with the annular abutment means whatever the angular
35 orientation of the closure of the container, release of the closure being effected by aligning the resilient locking arm with the resilient wall portion and then exerting pressure on the resilient wall portion to move the resilient locking arm clear of the abutment
40 means allowing the closure to be withdrawn.

Preferably the container body comprises a tubular container and an adapter ring arranged to be permanently positioned upon the container. Alternatively the container body may be a single element.
45 Preferably the closure includes a depending plug and the locking member projects from the plug.

The annular abutment means is suitably an annular shoulder but alternatively the circumferentially spaced abutments may be provided, the spacing
50 between adjacent abutments being less than the circumferential dimension of the locking member. The resilient wall portion is suitably a press tab hinged to the main part of the adapter ring and arrows may be provided on the container body and closure to facilitate alignment.

According to another aspect of the invention there is provided a child-resistant container and closure assembly comprising a container with a tubular body and a closure adapted to be seated on the
60 mouth of the container wherein the closure includes a depending portion and a resilient locking arm projecting outwardly from said depending portion, annular abutment means around the inside of the tubular body, and a resilient wall portion on the
65 tubular body cooperable with the resilient locking

arm, the closure being separable from the tubular body only when the resilient wall portion and resilient locking arm are aligned and pressure is exerted on the resilient wall portion to push the resilient locking arm inwardly clear of the abutment means allowing the closure to be removed; the abutment means otherwise preventing separation.

The invention will now be described by way of example with reference to the accompanying drawings in which:

75 Figure 1 is a perspective view of a preferred embodiment of a child-resistant container closure partially broken away for clarity;

80 Figure 2 is a partial longitudinal section of the container shown in Figure 1;

Figure 3 is a partial longitudinal section of the container showing how it may be opened by an adult;

Figure 4 is a front elevation of the press tab; and

85 Figure 5 is a longitudinal section of an alternative embodiment of child-resistant container closure.

In the drawings a child-resistant container closure 1 comprises a tubular container 2, an adapter ring 3 permanently located at the mouth of the container suitably by cooperating beads and/or a bead and a recess (not shown), and a closure 4. The adapter ring 3 is suitably arranged to engage the annular bead on our SECURITAINER tubular container disclosed in our prior Patent Specification No. 1246971. However, it will be readily understood that the tubular container 2 and adapter ring 3 may alternatively be a single tubular component.

The adapter ring 3, or alternative tubular component, as seen clearly from figure 2, has a specially contoured mouth comprising an annular seat 5 and an annular abutment shoulder 6 with an inwardly tapered portion 7 therebetween to facilitate introduction of the closure 4 as explained more fully below. Disposed immediately below the shoulder 6 is a press tab 8 which is hinged to the main part of the ring 3 along hinge line 9 and includes
105 ribbed portion 10 at its free end indicating where pressure should be exerted by a user's thumb. In addition, on the outside of the ring 3, aligned with the press tab 8, is an arrow 11.

110 The closure 4 comprises a dished top 12 having a protruding flanged periphery 13, and a depending plug part 14. The dished top 12 includes a diametric arrow 15 which acts both as a release indicator and a grip by which a user may manipulate the closure.

115 The depending plug part 14 includes an outwardly inclined locking arm 16 which is resiliently secured to the outside of the plug part 14 and a tapered free edge 17 which in use forms a primary seal 18 with the container 2. The resiliency of the locking arm
120 suitably is provided by the resiliency inherent in the plastics material from which the closure is moulded.

In use the adapter ring 3 is permanently located upon the mouth of the container 1 and then the closure 4 inserted. During insertion the tapered portion 7 causes the locking arm 16 to flex inwardly so as the pass the annular shoulder 6 and then, once it is beneath the shoulder, it springs outwardly returning to its normal position. In this position, see figure 2, the closure 4 cannot be removed.

130 In order to remove the closure 4 for access the

closure is moved so that the two arrows 11 and 15 are aligned thereby indicating that the corresponding press tab 8 and locking arm 16 are aligned. By exerting pressure upon the press tab 8, the tab

5 moves inwardly and in turn pushes the locking arm 16 inwardly so that the tab 16 may pass the shoulder 6 and allowing removal of the closure 4 by manipulation of the arrow grip 15 – see figure 3.

10 It will be understood that the adapter ring 3 may be formed as an integral part of the container 2 or may be formed in the manner of a sleeve or the like suitably secured in position on the container.

Figures 1 to 4 of the drawings illustrate an embodiment in which the adapter ring has a single press tab 8 to cooperate with a single locking arm 16. As an alternative two preferably diametrically opposed tabs 8 may be provided to cooperate with a single arm 16 so that the closure 4 may be removed when in either one of two positions. In a further alternative

20 and preferred arrangement we may provide two diametrically opposed press tabs 8 on the adapter ring 3 and two diametrically opposed arms 16 on the closure 4 so that finger and thumb pressure is needed to unlock the closure for removal (see figure 25 5).

Naturally the adapter ring 3 can be designed in any appropriate way for cooperation with the closure and may in some cases be a single sleeve like tubular component with a press tab formed as shown e.g. in Figure 4.

CLAIMS

1. A child resistant container and closure assembly comprising a container body with a mouth for insertion and removal of the contents and a closure

35 to close the mouth of the container body wherein removal of the closure from the body is prevented by engagement of a resilient locking arm on the closure with an annular or like abutment means on the container body so that the closure is positively locked in

40 operative position, unlocking being effected by manipulation of a press tab on the container body to depress the arm out of engagement with the abutment means whereby the closure may then be removed from the body.

2. A child resistant container and closure assembly comprising a container body having a mouth closable by means of a closure which includes a depending portion and a resilient locking arm projecting outwardly therefrom, annular abutment

50 means around the inside of the mouth of the container body, and a resilient wall portion or press tab on the container body cooperable with the resilient locking arm on the closure, the arrangement being such that with the closure in position on the body the resilient locking arm normally prevents removal of the closure by engagement with the annular abutment means whatever the angular orientation of the closure of the container, release of the closure being

60 effected by aligning the resilient locking arm with the resilient wall portion and then exerting pressure on the resilient wall portion to move the resilient locking arm clear of the abutment means allowing the closure to be withdrawn.

3. A child resistant container and closure assembly comprising a container with a tubular body and a

closure adapted to be seated on the mouth of the container wherein the closure includes a depending portion and a resilient locking arm projecting outwardly from said depending portion, annular abutment means around the inside of the tubular body, and resilient wall portion on the tubular body cooperable with the resilient locking arm, the closure being separable from the tubular body only when the resilient wall portion and resilient locking arm are

75 aligned and pressure is exerted on the resilient wall portion to push the resilient locking arm inwardly clear of the abutment means allowing the closure to be removed; the abutment means otherwise preventing separation.

4. An assembly according to any of claims 1, 2 or 3 wherein the container is tubular and wherein the locking arm is provided on a skirt depending from the top of an annular or like closure.

5. An assembly according to any of the preceding claims wherein the abutment means is provided on an adapter ring formed integrally with the container body.

6. An assembly according to any of claims 1 to 4 wherein the abutment means is provided on an adapter ring formed separately from the container body and seated thereon in the manner of a sleeve.

7. An assembly according to claim 4 wherein the skirt is in the form of a plug to seat in or on the mouth of the container body.

8. An assembly according to any of the preceding claims wherein the abutment means is in the form of an annular shoulder or of circumferentially spaced abutments with the spacing between adjacent abutments being less than the circumferential

100 dimension of the locking arm.

9. An assembly according to claim 6 wherein the adapter ring is arranged to engage with a bead and/or recess on the container body.

10. An assembly according to claim 5 wherein the adapter ring has a specially contoured mouth comprising an annular seat and an annular abutment shoulder with an inwardly tapered portion therebetween to facilitate introduction of the closure.

11. An assembly according to claim 10 wherein the press tab is hingedly secured to the ring along a hinge line.

12. An assembly according to any of the preceding claims wherein the closure has a dish top with a diametric arrow which acts both as a release indicator and a grip by which a user may manipulate the closure.

13. An assembly according to claim 1 or 2 or 3 wherein the locking arm is formed on a depending plug part of the closure and wherein the plug part has a tapered free end which, when in use, forms a primary seal with the container body.

14. An assembly according to any of the preceding claims wherein two substantially diametrically opposed press tabs are provided for cooperation with two substantially diametrically opposed locking arms.

15. A closure, including a resilient locking arm, for use in an assembly as claimed in any of the preceding claims.

16. A container body, including a press tab, for use in an assembly as claimed in any of the preceding claims 1 to 14.

5 17. A container and closure assembly substantially as hereinbefore described with reference to the accompanying drawings.

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